2017 Spring Netting (SNI) Summary Report

Marion Millpond

Waupaca County (WBIC 294500)

Introduction and Survey Objectives

In 2017, the Department of Natural Resources conducted a fyke netting survey of Marion Millpond in order to provide insight and direction for the future fisheries management of the water body. Primary sampling objectives of this survey are to characterize species composition, relative abundance and size structure. The following report is a brief summary of the activities conducted, general status of fish populations and future management options.

Acres: 116 Shoreline Miles: 3.8 Maximum Depth (feet): 12
Lake Type: Impoundment Public Access: Two Public Boat Launches
Regulations: Only two northern pike may be kept and they must be at least 26". All other species statewide default regulations.

Survey Information						
Site location	Survey Dates	Water Temperature (°F)	Target Species	Gear	Number of Nets	Net Nights
Marion Millpond	3/30/2017 - 4/8/2017	42 - 46	Northern Pike, Panfish	Fyke Net	5	32

WISCONSIN DNR CONTACT INFO.

Jason Breeggemann—Fisheries Biologist
Elliot Hoffman - Fisheries Technician
Wisconsin Department of Natural Resources
647 Lakeland Rd.
Shawano, WI 54166

Jason Breeggemann: 715-526-4227;
jason.breeggemann@wisconsin.gov

Elliot Hoffman: 715-526-4231;
elliot.hoffman@wisconsin.gov

Survey Method

- Marion Millpond was sampled according to spring netting (SNI) protocols as outlined in the statewide lake assessment protocol. The primary objective for this sampling period is to count and measure adult walleye and muskellunge. However, this survey can also be used to target adult northern pike. Other gamefish may be sampled but are considered by-catch as part of this survey.
- Fyke Nets were deployed in areas of the millpond that contained spawning habitat or were likely travel areas for northern pike. All newly captured northern pike were given a partial fin clip (top caudal fin). All northern pike were weighed and age structures (i.e., otoliths) were collected from a subsample of bluegill for age and growth analysis.
- Fish metrics used to describe fish populations include catch per unit effort, total abundance, proportional stock density, length frequency distribution, mean age at length, and relative weight.

Fish Metric Descriptions

Catch per unit effort (CPUE) is an index used to measure fish population relative abundance, which simply refers to the number of fish captured per unit of distance or time. For netting surveys, we typically quantify CPUE by the number and size of fish per net night. CPUE indexes are compared to statewide data by percentiles and within lake trends. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

Total abundance is a metric that describes population size and is estimated by mark and recapture. In our study, all northern pike that were captured were given a partial caudal fin (i.e., tail fin) clip and released. Each time the nets were checked, all northern pike were examined for a partial caudal fin clip. The number of previously captured individuals (i.e., fin clipped) was recorded and proportions of marked individuals to unmarked individuals was used to estimate the total abundance of the northern pike population.

Proportional Stock Density (PSD) is an index used to describe size structure of fish populations. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values between 40 - 60 generally describe a balanced fish population.

Length frequency distribution (LFD) is a graphical representation of the number or percentage of fish captured by half inch or one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

Mean Age at Length is an index used to assess fish growth. Calcified structures (e.g., otoliths, spines, or scales) are collected from a specified length bin of interest (e.g., 7.0-7.5 inches for bluegill). Mean age is compared to statewide data by percentile with growth characterized by the following benchmarks: slow (<33rd percentile); moderate (33rd to 66th percentile); and fast (>66th percentile).

Relative Weight is an index used to assess the plumpness (i.e., condition) of fish. It is calculated by comparing the observed weight of a fish to the standard weight (i.e., predicted average weight) of that fish given its length. A relative weight of 93 means it has average plumpness/weight compared to other fish of the same length. Relative weights above 93 mean it is more plump than average.

Relative Abundance (Catch per Unit Effort)						
Species	2017 Total Number Captured	CPUE (number per net night)			2017 Statewide Percentile Rank	2017 Abundance Rating
		2005	2013	2017		
BLACK BULLHEAD	927	0.3	558.3	29.0	-	-
BLACK CRAPPIE	7	1.7	0.5	0.2	9	Low
BLUEGILL	998	42.7	144.6	31.2	75	High
BROWN BULLHEAD	606	0.2	75.7	18.9	-	-
GOLDEN SHINER	11	0.1	8.5	0.3	-	-
LARGEMOUTH BASS	7	2.1	2.5	0.2	26	Low
NORTHERN PIKE	296	2.4	8.1	9.3	92	High
PUMPKINSEED	298	2.2	5.4	9.3	86	High
WARMOUTH	2	0.1	0.4	0.1	-	-
WHITE SUCKER	1	0.1	33.3	0.0	-	-
YELLOW BULLHEAD	26	16.1	3.2	0.8	-	-
YELLOW PERCH	866	7.4	123.3	27.1	87	High

Marion Millpond (WBIC 294500) - Summary Report Continued

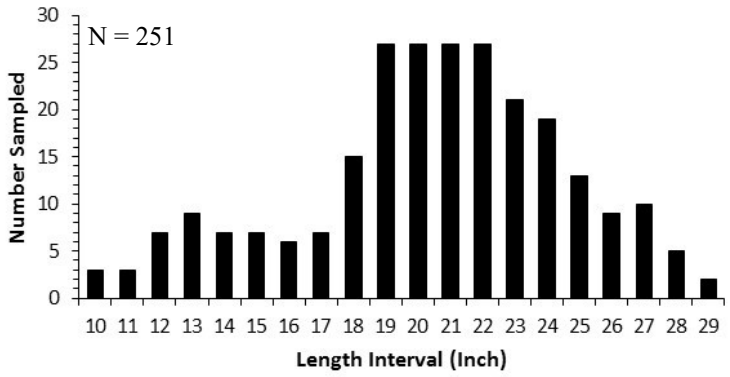
Gamefish Summary

Waupaca County

2017 Size Structure Metrics

Species	Total	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
NORTHERN PIKE	252	20.9	10.8 - 29.3	14.0 and 21.0	228	131	58	69	Moderate - High
LARGEMOUTH BASS	7	17.3	16.5 - 18.0	8.0 and 12.0	7	7	100	100	High

Northern Pike Length Frequency



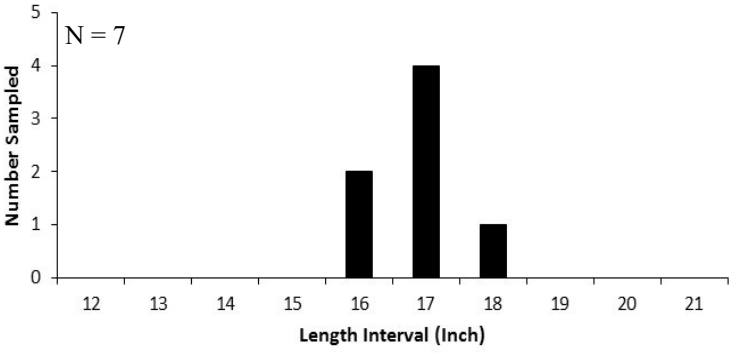
Size Structure (PSD) Trends

Species	Historical Median (2005-Present)	PSD by Year		
		2005	2013	2017
NORTHERN PIKE	70	70	87	58
LARGEMOUTH BASS	85	85	83	100

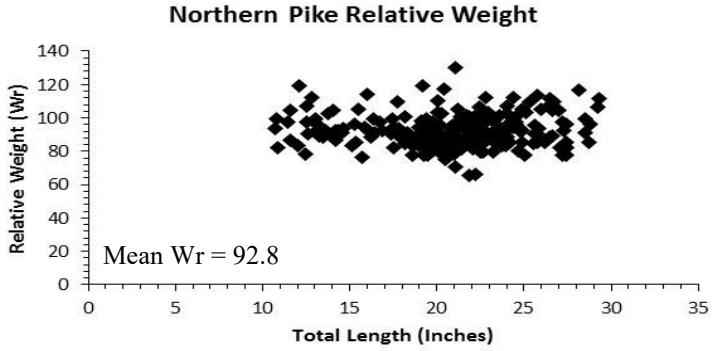
2017 Total Adult Abundance (Mark and Recapture Population Estimate)

Species	Number Marked (Netting)	Number Sampling Events (Netting)	Number Recaptures (Netting)	Schnabel Population Estimate (95% C.I.)	Number per Acre	Abundance Rating
NORTHERN PIKE	250	8	44	728 (540 - 1,118)	6.3	Moderate - High

Largemouth Bass Length Frequency



Northern Pike Relative Weight



Gamefish Summary

Northern Pike

- Density and size structure of northern pike were found at moderate-high levels when compared to statewide data. Relative abundance in 2017 was slightly higher than the last netting survey, whereas size structure indices showed a lower percentage of fish ≥ 21 inches in 2017 compared to the 2013 netting survey. Just over 10% of the northern pike captured in 2017 were legal size (i.e., > 26.0 inches) and no pike ≥ 30.0 inches were captured. Intense fishing pressure is likely driving some of the observed trends in size structure. Despite the high abundance, northern pike have ample food available for growth as shown by the high density of panfish and bullheads. Additionally, condition indices show that most pike have average to above average weights for their lengths, indicating they are feeding relatively well.

Largemouth Bass

- Largemouth bass densities were low and size structure showed a fishery dominated by large individuals. However, electrofishing is the more preferred gear for evaluating the largemouth bass population. An electrofishing survey was also conducted in spring, 2017. Results from that survey can be found in a separate report.

Marion Millpond (WBIC 294500) - Summary Report Continued

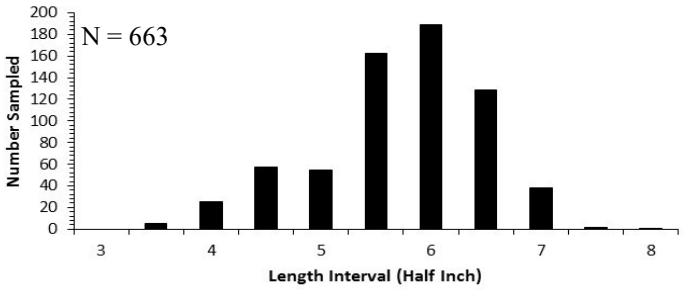
Panfish Summary

Waupaca County

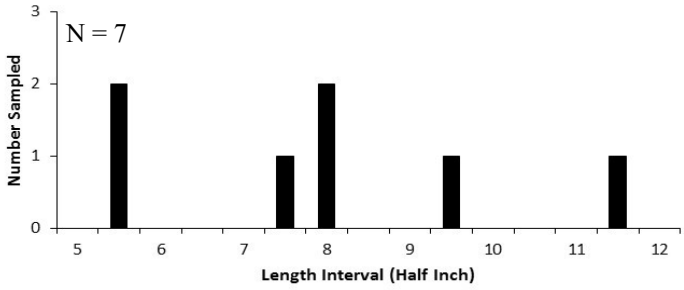
2017 Size Structure Metrics

Species	Number Measured	Average Length (inches)	Length Range (inches)	Stock and Quality Sizes (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
BLUEGILL	663	6.0	3.5 - 8.3	3.0 and 6.0 inches	663	359	54	49	Moderate
BLACK CRAPPIE	7	8.1	5.6 - 11.9	5.0 and 8.0 inches	7	4	57	47	Moderate
PUMPKINSEED	266	4.9	3.6 - 7.9	3.0 and 8.0 inches	266	18	7	9	Low
YELLOW PERCH	315	6.2	5.0 - 9.5	5.0 and 8.0 inches	315	4	1	10	Low

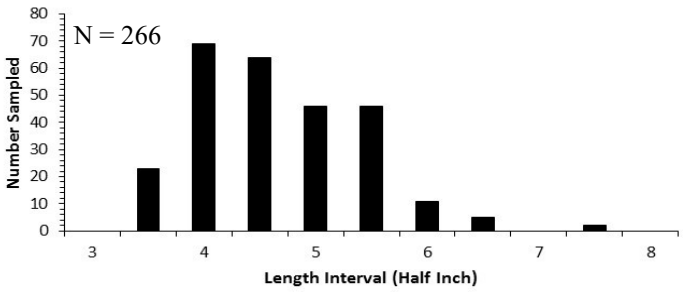
Bluegill Length Frequency



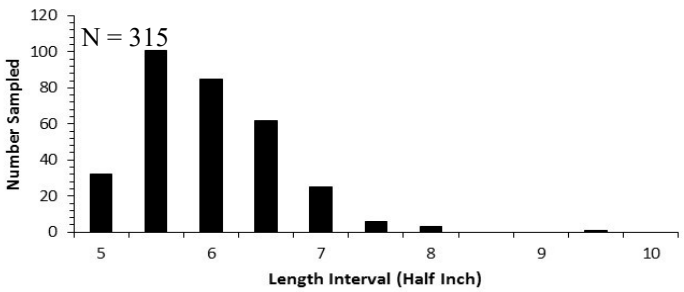
Black Crappie Length Frequency



Pumpkinseed Length Frequency



Yellow Perch Length Frequency



Size Structure (PSD) Trends

Species	Historical Median (2005-Present)	PSD by Year		
		2005	2013	2017
BLUEGILL	43	43	36	54
BLACK CRAPPIE	57	78	27	57
PUMPKINSEED	13	39	13	7
YELLOW PERCH	3	4	3	1

Growth Metrics - 2017

Species	Total	Length Bin	Mean Age	Age Range	Percentile Rank	Growth Rating
BLUEGILL	10	5.5 - 6.4	5.3	5 - 7	29	Slow
BLUEGILL	13	6.5 - 7.4	5.5	5 - 7	50	Moderate

Panfish Summary

Bluegill

- Bluegill were found at high densities and size structure was found to be moderate. However, only 6% of the bluegill captured were ≥ 7.0 inches and only 0.2% of the bluegill captured were ≥ 8.0 inches. The majority of the bluegill captured were between 5-7 inches. Growth metrics for harvestable size bluegill showed slow-moderate growth for this species in Marion Millpond. It is likely the high density of bluegill is causing the slower growth due to excessive competition among so many bluegill for limited resources. Bluegill PSD has increased from the last survey in 2013, indicating a higher percentage of bluegill captured are ≥ 6.0 inches. The higher observed PSD in 2017 is likely due to the fact that the reservoir was only drawn back up in spring 2010 so most bluegills were ≤ 3 years old in 2013.

Black Crappie

- Despite stocking adults and large fingerling black crappie in 2010 combined with another stocking of adults in 2013, black crappie densities remain low in Marion Millpond. Black crappie recruitment can be highly variable from year to year and they can go many years without pulling off a strong year class. It appears as though they still have not pulled off a significant year class in Marion Millpond.

Pumpkinseed

- Pumpkinseed densities were also high and size structure was very poor. Only 7% of pumpkinseeds captured were ≥ 6.0 inches and only 0.7% of pumpkinseeds captured were ≥ 7.0 inches. Competition among pumpkinseed for resources is likely driving the small size structure.

Yellow Perch

- Yellow perch were also found in high densities with poor size structure. Only 1.3% of the yellow perch sampled were ≥ 8.0 inches. Similar to bluegill, it is likely that the high density of yellow perch is resulting in excessive competition for resources and poor growth as a result.

Marion Millpond (WBIC 294500) - Summary Report Continued

Stocking History and Management Options

Waupaca County

Stocking History 1972 - Present

Species	Year	Age	Mean Length (inches)	Number Stocked
BLACK CRAPPIE	2016	ADULT	7.0	2,000
NORTHERN PIKE	2016	LARGE FINGERLING	8.0	2,893
LARGEMOUTH BASS	2015	LARGE FINGERLING	1.9	5,776
NORTHERN PIKE	2015	LARGE FINGERLING	9.4	2,893
LARGEMOUTH BASS	2014	LARGE FINGERLING	3.2	2,650
NORTHERN PIKE	2014	LARGE FINGERLING	9.5	750
BLACK CRAPPIE	2013	ADULT	6.0	1,498
NORTHERN PIKE	2013	ADULT	14.0	500
LARGEMOUTH BASS	2013	LARGE FINGERLING	2.1	2,698
YELLOW PERCH	2012	ADULT	7.0	1,895
LARGEMOUTH BASS	2012	LARGE FINGERLING	3.0	2,695
NORTHERN PIKE	2012	LARGE FINGERLING	7.5	250
LARGEMOUTH BASS	2011	LARGE FINGERLING	3.0	5,396
NORTHERN PIKE	2011	LARGE FINGERLING	8.4	2,624
NORTHERN PIKE	2010	LARGE FINGERLING	8.4	2,790
BLUEGILL	2010	LARGE FINGERLING	1.8	2,990
BLACK CRAPPIE	2010	LARGE FINGERLING	1.8	1,985
LARGEMOUTH BASS	2010	LARGE FINGERLING	3.9	1,195
BLUEGILL	2010	ADULT (BROODSTOCK)	5.0	3,000
YELLOW PERCH	2010	ADULT (BROODSTOCK)	6.0	5,000
BLACK CRAPPIE	2010	ADULT (BROODSTOCK)	6.0	2,500
NORTHERN PIKE	2009	SMALL FINGERLING	2.3	4,990
BLACK CRAPPIE	2008	YEARLING	3.0	3,000
NORTHERN PIKE	2008	LARGE FINGERLING	7.4	1.320
YELLOW PERCH	2007	ADULT	6.6	5,993
NORTHERN PIKE	2007	LARGE FINGERLING	12.0	150
BLUEGILL	2007	ADULT (FIELD TRANSFER)	5.8	862
PUMPKINSEED	2007	ADULT (FIELD TRANSFER)	6.0	177
WHITE SUCKER	2007	ADULT (FIELD TRANSFER)	18.3	37
YELLOW PERCH	2007	ADULT (FIELD TRANSFER)	7.8	4
BLACK CRAPPIE	2007	ADULT (FIELD TRANSFER)	8.0	244
GOLDEN SHINER	2007	ADULT (FIELD TRANSFER)	-	1
NORTHERN PIKE	2007	ADULT (FIELD TRANSFER)	18.2	36
BROWN BULLHEAD	2007	ADULT (FIELD TRANSFER)	13.8	144
LARGEMOUTH BASS	2007	ADULT (FIELD TRANSFER)	13.5	249
YELLOW BULLHEAD	2007	ADULT (FIELD TRANSFER)	10.9	16
WALLEYE	1972	FINGERLING	3.0	6,000
WALLEYE	1972	FINGERLING	9.0	1,000

Management Options

Northern Pike

- Northern pike were found at moderate-high densities and were growing to at least 25-30 inches. Harvest may be limiting the number of pike ≥ 30 inches in Marion Millpond. The special northern pike regulation should ensure that the current size structure and densities are maintained.
- The high density of northern pike will hopefully reduce the density of panfish. Plenty of forage exists to allow northern pike to grow quickly.
- Controlling invasive aquatic plant densities will allow northern pike to forage efficiently, resulting in faster growth rates for pike.
- Given the density and size structure of northern pike as well as optimal spawning conditions in the Pigeon River, the northern pike population should be able to sustain itself in the future, making stocking unnecessary going forward.
- No other management recommendations necessary at this time.

Largemouth Bass

- Fyke netting is not the most appropriate gear to evaluate the largemouth bass fishery. Therefore, management recommendations are not provided in this report. See the spring electrofishing II (SEII) report for additional information on the largemouth bass population in Marion Millpond.

Panfish

- Fyke netting is not the most appropriate gear to evaluate the populations of most panfish species including bluegill and pumpkinseed. Therefore, management recommendations are not provided for these species within in this report. See the spring electrofishing II (SEII) report for additional information on the bluegill, pumpkinseed, and yellow perch populations in Marion Millpond.
- Despite stockings in 2010, 2013, and 2016, black crappie were sampled in low abundance. If this trend continues in the future and anglers desire a black crappie fishery, additional stockings may be necessary.

Other Management Objectives

- Continue to work with WDNR staff and local lake management organizations to manage aquatic plants. High densities of invasive plants often inhibit the ability of predators to effectively forage resulting in slow growing predator populations. Additionally prey fish (e.g., bluegill) populations can become overabundant and slow growing when predators cannot effectively forage on them.
- Marion Millpond is on an eight year rotation. Marion Millpond is due for a comprehensive survey again in 2021.